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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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12/21/2004

Jonathan Sweat

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6449

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01/08/2009

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WASHINGTON, DC 20005

EXAMINER

HOLT, ANDRIAE M

ART UNIT

PAPER NUMBER

1616

NOTIFICATION DATE

DELIVERY MODE

01/08/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-PAT-Email@rfem.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/518,591	<b>Applicant(s)</b> SWEAT ET AL.	
	<b>Examiner</b> Andriae M. Holt	<b>Art Unit</b> 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 29-32 and 38-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-32 and 38-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office Action is in response to the amendment filed on September 16, 2008. Claims 29-32 and 38-40 are pending in the application. Claims 29 and 39 have been amended. Claim 40 has been newly added.

#### **Status of Claims**

Rejections not reiterated from the previous Office Action are hereby withdrawn. The following rejections are either reiterated or newly applied. They constitute the complete set of rejections and/or objections presently being applied to the instant application.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Greene Publication (1992).

The Greene Publication discloses the findings of a research study to demonstrate the temperature-controlled pesticide release characteristics of Interlimer polymer microcapsule formulations of three widely used pesticides trifluralin (dinitroaniline compound), diazinon, and alachlor and to evaluate the biological activity of each compared to that of commercial formulations (Introduction). The Greene Publication discloses that in two experiments the biological activity of various

Art Unit: 1616

encapsulated trifluralin formulations was compared to that of a commercially available emulsifiable concentrate trifluralin formulation. The Greene Publication further discloses the first experiment was conducted in a field containing a Sharpsburg silt loam soil to evaluate the response of corn and two weed species to 0.56 and 1.12 kg of ai/ha rates of the fast and slow release trifluralin capsules with either 20 or 30° C melting points. The Greene Publication discloses the second experiment was established in the field to evaluate the effect of delayed soil incorporation of various trifluralin formulations on the control of giant foxtail (page 2275, Biological Activity Evaluation of Trifluralin Formulations). The Greene Publication discloses all treatments were applied in 165L of water/ha with a hand-held spray boom that was powered by CO<sub>2</sub>. The Greene Publication discloses all treatments were incorporated into the soil to the depth of 7.5 cm using a power-driven rototiller. The Greene Publication further discloses on the same day of application, four rows of corn were planted in each plot.

The Greene Publication discloses in the Biological Response to Trifluralin Formulations that corn is a large-seeded grass that is moderately susceptible to trifluralin and was most injured by the 1.12 kg/ha rate of each trifluralin formulation in the first experiment (Table II). The Greene Publication discloses that corn injury and stand reduction was significantly reduced by the 30° C formulations at the 1.12 kg/ha (Table II). The Greene Publication discloses that trifluralin EC formulations are not applied to the soil for weed control prior to corn emergence due to the potential for crop injury. The Greene Publication further discloses these experiments demonstrated that the 30° C melting point capsules reduced corn injury caused by trifluralin applied prior to

Art Unit: 1616

corn emergence without reduced weed control (method of safening a desirable crop from the effects of a dinitroaniline compound applied to control undesirable plants, instant invention and method of reducing post emergence crop damage due to a dinitroaniline compound, instant invention) (pages 2276, col. 2 page 2277, cols. 1-2, Biological Response to Trifluralin Formulations).

The Greene Publication meets all of the limitations of the claims and thereby anticipates the claims.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The rejection of claims 29-32 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 5,665,674), Lo (US 5,310,721) and Benoff (US 5,705,174) in combination **is maintained**.

Claims 29-32 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al. (US 5,665,674), Lo (US 5,310,721) and Benoff (US 5,705,174) in combination.

### ***Applicant's Invention***

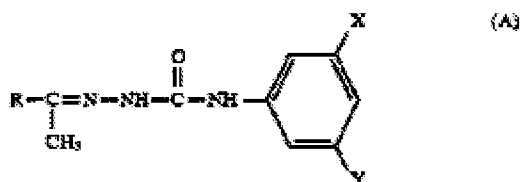
Applicant claims a method of inhibiting the growth of an undesired plant by contacting the plant with a herbicidally effective amount of a microcapsule composition. The microcapsule composition includes a dinitroaniline compound and the median diameter of the capsule from 3 micrometers to 10 micrometers. The microcapsule composition is effective against crabgrass. Applicant also claims a method of safening a desirable crop from the effects of an herbicide applied to control undesirable plants using the microcapsule composition comprising a dinitroaniline compound.

### ***Determination of the scope of the content of the prior art (MPEP 2141.01)***

Anderson et al. teaches the use of auxin transport inhibitors, herbicidal semicarbazones, as potentiators or enhancers of herbicides, as well as co-application of such auxin transport inhibitors and herbicides, compositions containing at least one auxin transport inhibitor in combination with at least one herbicide and use of these in combating or controlling undesired plant growth and in plant growth regulation (col. 1,

Art Unit: 1616

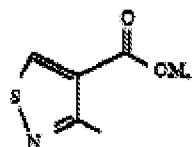
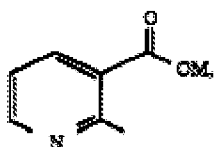
lines 13-19). Anderson et al. teaches especially preferred auxin transport inhibitors are compounds of Formula A:



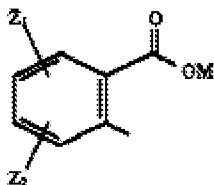
wherein,

X and Y represent independently, hydrogen, fluorine or chlorine, and

R is the group



or



wherein Z<sub>1</sub> and Z<sub>2</sub> are independently hydrogen, fluorine or chlorine and M is hydrogen, or a salt forming moiety e.g. an alkali metal cation or an optionally substituted ammonium cation.

Diflufenzopyr, herbicide component in claim 29 of the instant invention is an auxin transport inhibitor semicarbazone, as evidenced by the Corn and Soybean Herbicide Chart, page 2 and is also a Compound according to Formula A as evidenced by Compendium of Pesticide Common Names, see Structure. Diflufenzopyr and dicamba,

Art Unit: 1616

herbicide components in claims 29 of the instant invention, are the components of *Distinct*, also evidenced by the Corn and Soybean Herbicide Chart, page 2, col. 2.

Anderson et al. further teaches co-application results in herbicidal activity, which is significantly superior to the additive effectiveness of the individual active substance (col. 2, lines 42-44). Anderson et al. teaches co-application is understood to be concurrent, or immediately sequential application (e.g. within 24 hours), application as a tank mix or applications of fixed combination premixes (col. 2, lines 51-54). Anderson et al. further teaches the preferred modes of application include tank mix prepared by adding an auxin transport inhibitor to a tank containing the other herbicide partner and an appropriate surfactant (col. 5, lines 43-46) (claim 29, Instant invention, applying as a tank mix).

Anderson et al. teaches that herbicides which may be potentiated by use of auxin transport inhibitors, especially compounds of Formula A include: growth regulators including benzoic acids, e.g. dicamba (col. 2, lines 55-62) and growth inhibitors including dinitroanilines e.g. trifluralin and pendimethalin (col. 3, lines 31-33) (claims 29 and 31, Instant invention, dinitroaniline compound with a herbicide formulation comprising diflufenzopyr or dicamba or diflufenzopyr and dicamba and specific dinitroaniline compound pendimethalin or trifluralin). Anderson teaches the suitability of specific co-applications for pre- or post-emergent uses and selectivity will depend on the partners chosen (col. 4, lines 48-50) (claim 29, a method for preemergence control of undesirable plant species). Anderson further teaches that depending on the choice of co-application partners both pre- and post-emergent activity on a large range of



Art Unit: 1616

broadleaf and grassy weeds may be achieved (col. 5, lines 47-49). Examples of weeds include *Digitaria* sp.-e.g. crabgrass (col. 6, line 1) (claim 32, undesired plant species is crabgrass).

Anderson et al. further teaches crop selectivity will also usually depend upon choice of partners. Compounds of Formula A for example exhibit excellent selectivity in corn and small grain crops and can also be used in turf and fallow applications (col. 6, lines 33-36).

Lo teaches a process for the preparation of microcapsules having a capsule wall of a polymeric substance enclosing a water-immiscible material (col. 1, lines 11-13). Lo teaches that in the process of the invention, it is possible to encapsulate a very wide range of agrochemicals, for example herbicides, plant growth regulators, insecticides acaricides, fungicides, nematocides, safeners, and actoparasitocides (col. 4, lines 25-29). Lo further teaches with respect to their chemical constitution, these substances may belong to a very wide range of compound classes (col. 4, lines 30-33): dinitroanilines, including pendimethalin and trifluralin (col. 5, lines 1-4) and miscellaneous, dicamba (col. 5, lines 51-56).

Lo teaches the agricultural chemicals to be encapsulated need not be limited to only one type, but may be a combination of two or more various types, for example two herbicides or a herbicide with an insecticide or a safener (col. 6, lines 5-9) (claim 29, instant invention, microcapsule composition, comprising a dinitroaniline compound with a herbicide formulation comprising diflufenzopyr or dicamba or diflufenzopyr and dicamba). Lo further teaches the microcapsules of the invention in some instances

Art Unit: 1616

exhibit decreased crop damage without loss of herbicidal effectiveness (col. 8, lines 35-39).

Benoff et al. teaches a process for the preparation of microcapsule compositions, methods for using those microcapsule compositions containing those microcapsule compositions and microcapsules prepared by the process of the invention (Abstract). Benoff teaches that the process of the invention is particularly suitable for the preparation of microcapsules containing herbicidal compounds and insecticidal compounds (col. 3, lines 34-36). Herbicidal compounds especially suitable for use in the invention include dinitroaniline compounds such as pendimethalin and trifluralin (col. 3, lines 36-39) (claims 29 and 31, instant invention, microcapsule composition comprising dinitroaniline compound, pendimethalin or trifluralin).

Benoff et al. further teaches the microcapsules prepared by the process of the invention preferably have a median diameter of about 3 micrometers to 50 micrometers and more preferably about 5 micrometers to 15 micrometers, the ranges of claim 30, 3 micrometers to 10 micrometers of the instant invention.

***Ascertainment of the difference between the prior art and the claims  
(MPEP 2141.02)***

Anderson et al. does not teach microcapsule compositions and the median diameter of the microcapsule from 3 micrometers to 10 micrometers. It is for this reason Lo and Benoff et al. are combined.

Lo does not teach the microcapsule has a median diameter from 3 micrometers to 10 micrometers or the desired plant species is crabgrass. It is for this reason Anderson and Benoff et al. are combined.

Benoff et al. does not teach combining the dinitroaniline compound with diflufenzopyr or dicamba or diflufenzopyr and dicamba. It is for this reason Anderson et al. and Lo are combined.

***Finding a prima facie obviousness  
Rationale and Motivation (MPEP 2142-2143)***

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Anderson et al., Lo and Benoff et al. to produce a method of controlling undesirable plant species with a herbicidally effective microcapsule composition comprising dinitroaniline with diflufenzopyr or dicamba or diflufenzopyr and dicamba. In view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980), it is prima facie obvious to combine two or three compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in prior art, thus claims that requires no more than mixing together two or three conventional herbicides set forth prima facie obvious subject matter. It is known in the art that combining herbicides increase the efficacy of a herbicide such that the maximum level of control or growth regulation for a given

Art Unit: 1616

application rate of a herbicide is increased, or alternatively, the application rate of a herbicide giving optimum control or growth regulation can be reduced.

It is also known in the art that microcapsules have many benefits, including, but not limited to: protection of the active ingredients from environmental degradation, manipulation of bioavailability and persistence, reduction of phytotoxicity to seeds and crops, improved selectivity between target and nontarget plants, and improved handling qualities of formulations. As taught by Lo, agricultural chemicals to be encapsulated need not be limited to only one type, but may be a combination of two or more various types, for example two herbicides or a herbicide with an insecticide or a safener. In addition Lo teaches that microcapsules exhibit decreased crop damage without loss of herbicidal effectiveness.

One of ordinary skill in the art at the time the invention was made would have been motivated to combine the teachings of Anderson et al., Lo and Benoff et al. and use microcapsules to formulate a method of controlling undesirable plants while reducing crop damage due to the application of dinitroaniline compounds that would combine herbicides to exploit the strong properties of each herbicide while minimizing any weakness or undesirable properties because Lo teaches that microcapsules exhibit decreased crop damage without loss of herbicidal effectiveness. By co-formulating the herbicides in a microcapsule composition, one would be able to produce an herbicide that would not only increase the spectrum of annual weeds controlled, but reduce the phytotoxicity to seeds and crops, improve the selectivity between the targeted undesired plants and the crops and improve the handling qualities of formulations.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited references.

### ***Response to Arguments***

Applicant's arguments filed September 16, 2008 have been fully considered but they are not persuasive. Applicant argues that a person skilled in the art who combines the teachings of Lo and Benoff with the teaching of Anderson et al. will end up with a microcapsule formulation which must comprise auxin transport inhibitors.

In response to applicant's argument, the auxin transport inhibitor, as noted in the response to arguments in the previous office action, is Diflufenzopyr, an essential component of the independent claim 29 of the instant invention. The dinitroaniline compound of the instant invention is combined with an herbicide formulation comprising diflufenzopyr or dicamba or diflufenzopyr and dicamba. This combination is essential to the rejected claims 29-32. Anderson specifically teaches in col. 7, lines 9-11, 2-acetylnicotinic acid 4-(3, 5-difluorophenyl) semicarbazone (diflufenzopyr), used in combination with dicamba. Anderson teaches that the auxin transport inhibitor enhances the activity of other herbicides when used in combination. These herbicides include dinitroanilines such as trifluralin and pendimethalin, as well as, dicamba. Applicant also uses the term "comprising" in the claims which does not exclude auxin transport inhibitors from the formulation. Thus, one skilled in the art would have been motivated to make this combination as Anderson and the instant claims indicate these

Art Unit: 1616

compounds are an essential component of the formulation to combat or control undesirable plant growth as claimed in the instant invention.

Applicant argues that one skilled in the art would not look to Anderson, Lo and Benoff to find a way to reduce crop damage caused by dinitroanilines as none of the references suggest methods of reducing crop damage. In response to applicant's argument, Lo teaches in col. 8, lines 35-39, that microcapsules in some instances exhibit decreased crop damage without loss of herbicidal effectiveness. Therefore, one skilled in the art at the time the invention was made would have been motivated to combine the teachings of Anderson et al., Lo, and Benoff and use the combination to reduce crop damage caused by dinitroanilines because Lo teaches and suggests that microcapsules that can contain dinitroaniline compounds exhibit decreased crop damage without loss of herbicidal effectiveness.

None of the claims are allowed.

### ***Conclusion***

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 1616

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andriae M. Holt whose telephone number is (571)272-9328. The examiner can normally be reached on 7:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richter Johann can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Patent Examiner  
Art Unit 1616

/John Pak/  
Primary Examiner, Art Unit 1616